Utah's Tax Portfolio

Current and Future Characteristics
An Examination of Utah's Tax Base

Prepared by Governor's Tax Review Advisors

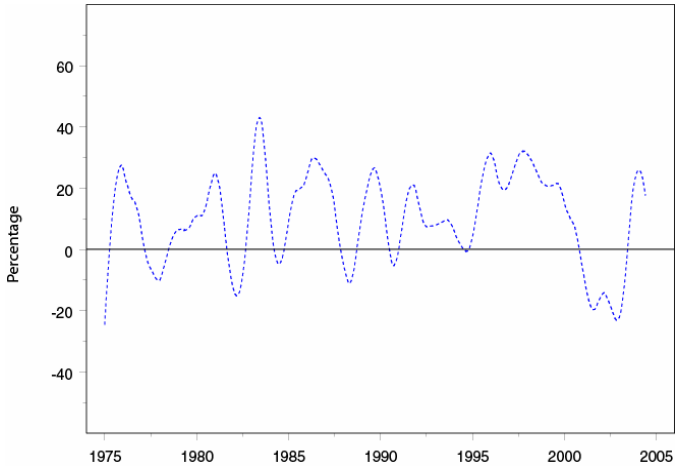
Principles of Portfolio Management

- Expected return and risk are both important dimensions of a financial portfolio
- Risk has two components
  - Systematic (risk on the particular company) or market risk (risk that is tied to the market)
  - Nonsystematic or company specific risk
- Diversification in portfolio occurs as nonsystematic risks cancel each other

The Governor's Tax Advisors have applied some well known principles of Investment Portfolio Management to the tax system. A portfolio manager can minimize risk by diversification.

Think about taxes as you would think about an investment portfolio – risk and return.

Smoothed Return on the S & P 500 Market Portfolio



This graph shows the smoothed return on the S&P market portfolio. This becomes the standard that we will measure individual stocks against.

Beta as a Measure of Relative Risk

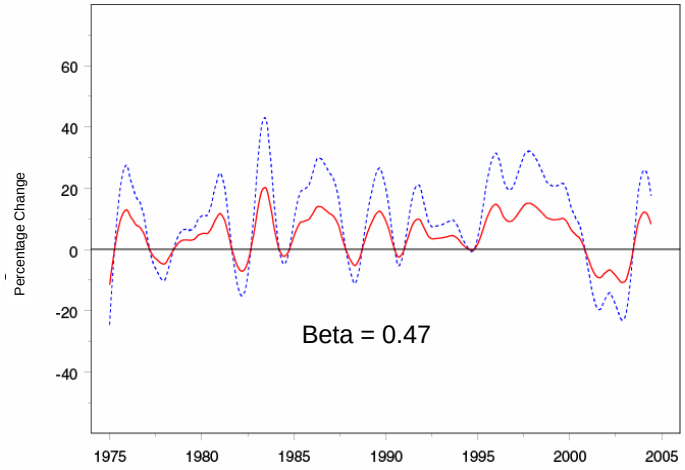
Return on a company as a percentage of the S&P 500

$$\beta = \frac{\text{Company Return}}{\text{Return on the Market Porfolio}}$$

$$= \frac{\text{Percentage Change in Equity Price}}{\text{Percentage Change in the Market Portfolio}}$$

Beta is a measure of relative risk and shows how an individual stock moves compared to the market as a whole. A Beta of 1 moves exactly with the market. A Beta of less than 1 fluctuates less than the market and a beta of more than 1 moves fluctuates more than the market and is considered more volatile than the market.

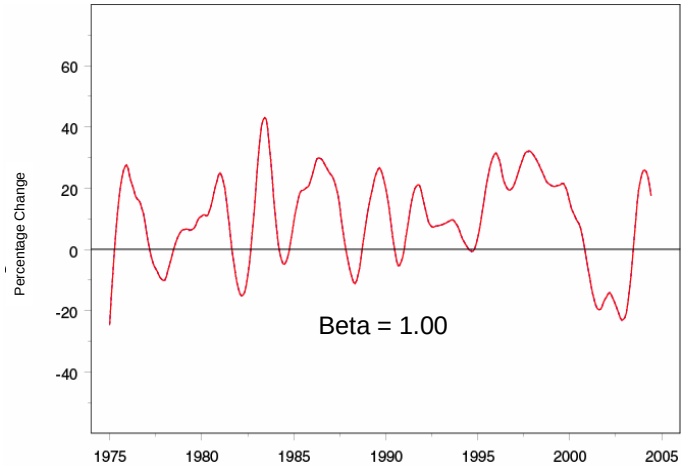
Systematic Component of Questar Expected Return



Since Questar has a beta of less than 1, it will not fluctuate as much as the market. Notice that when the market goes up (blue dotted line), the red solid line does not go up as much. Likewise, when the market goes down, Questar does not go down as much.

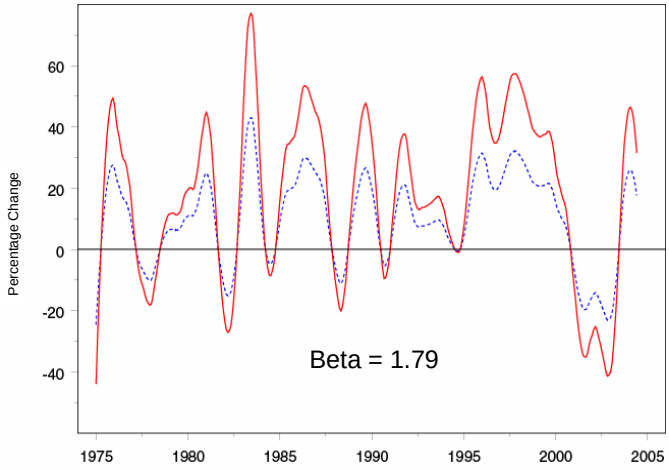
Forty-seven percent, nearly one-half of Questar's stock price is tied to the stock market.

Systematic Component of Zion's Bank Expected Return



Zions bank has a beta of 1 and moves in lock step with the market.

Systematic Component of Micron Expected Return



Micron's beta is greater than one. When the market goes up, Micron's stock goes up more and when the market goes down, Micron's stock drops further than the market. If you are an investor that owns this stock, you are very happy when the market goes up, but not happy when the market goes down. This could be considered a volatile stock.

Portfolio Beta

	Questar	Zions	Micron	Portfolio
Equally Weighted Portfolio	$\frac{1}{3} \times 0.47 + \frac{1}{3} \times 1.00 + \frac{1}{3} \times 1.79$	=		1.09
Aggressive Portfolio	$\frac{1}{8} \times 0.47 + \frac{1}{8} \times 1.00 + \frac{3}{4} \times 1.79$	=		1.53
Conservative Portfolio	$\frac{3}{4} \times 0.47 + \frac{1}{8} \times 1.00 + \frac{1}{8} \times 1.79$	=		0.70

Individual stocks are combined to create a portfolio. The beta of each portfolio is the weighted sum of its components. Using the three previously mentioned companies, a portfolio where each stock is equally weighted has a portfolio beta of 1.09, just slightly more volatile than the market. If we want to create a more aggressive portfolio, we would assign more weight to the Micron stock. If we want a more conservative portfolio, we would assign more weight to the Questar stock. Depending on our appetite for risk, we can design a portfolio that is aggressive or conservative.

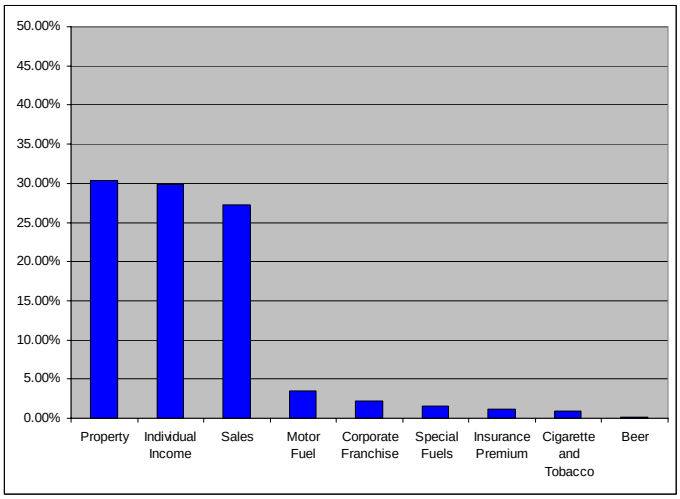
Application of Financial Principles to Tax Portfolios

- Expected rate of growth and risk are both important dimensions of tax portfolio
- Systematic risk can be measured relative to overall economic growth
- Total nonagricultural wages or personal income are good potential measures of state macroeconomic activity

The same principles that are applied to stock portfolio can be applied to taxes when looking at our “tax portfolio”.

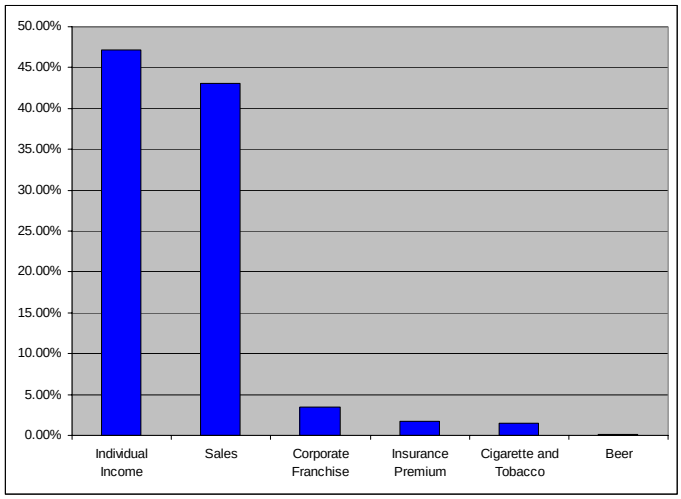
State of Utah Revenue Portfolio

State Government and Property Tax Education



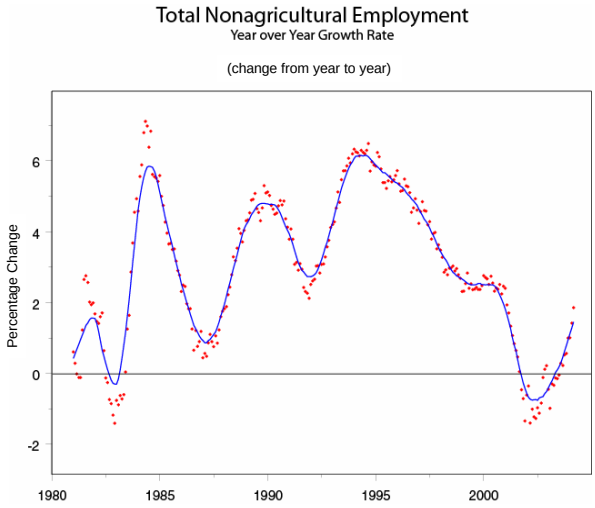
Utah's Revenue or Tax Portfolio is composed of taxes, levies and fees. The major contributors are included in this graph. Clearly the property, individual income and sales taxes are the largest.

General and Uniform School Fund



Utah's two biggest funds are the General and the Uniform School Funds. The taxes on this graph make up the General and Uniform School Funds. (Property taxes are not included in this graph.)

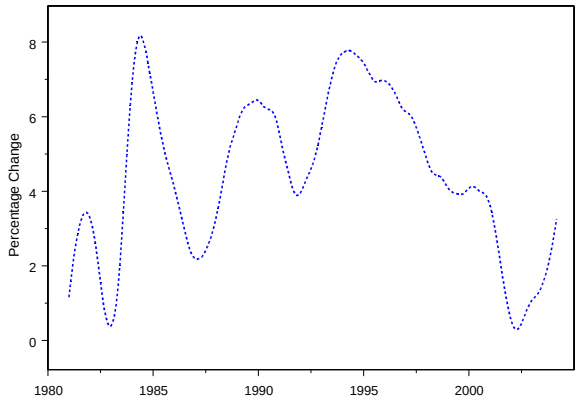
Utah's Business Cycle



A very good indicator of how the economy is doing is Total Nonagricultural Employment.

General Pattern for Total Nonagricultural Wages

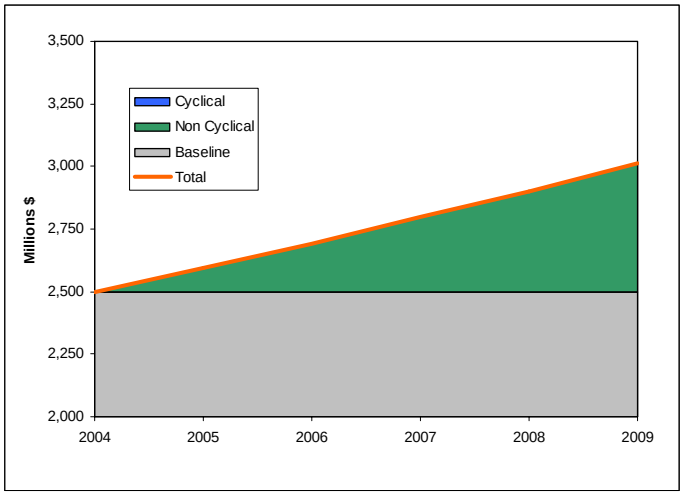
(inflation added)



Non-ag wages is another indicator of the business cycle. This indicator is used by economists to forecast tax collections. Just as the S&P was the standard when looking at stocks, this indicator becomes the standard when looking at tax collections. Since 1980, total nonagricultural wages has averaged about 3.0%.

Property Tax

Total Nonagricultural Wage Growth = 0%

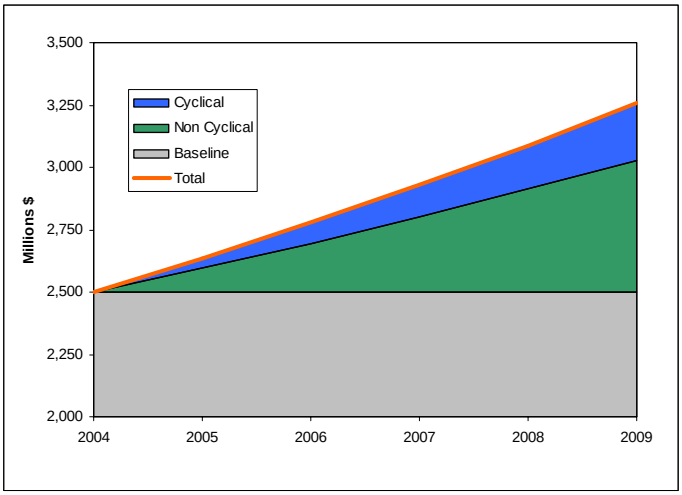


Non-Cyclical = 3.8%

Without any growth in non-ag wages, the property tax base is growing at 3.8%.

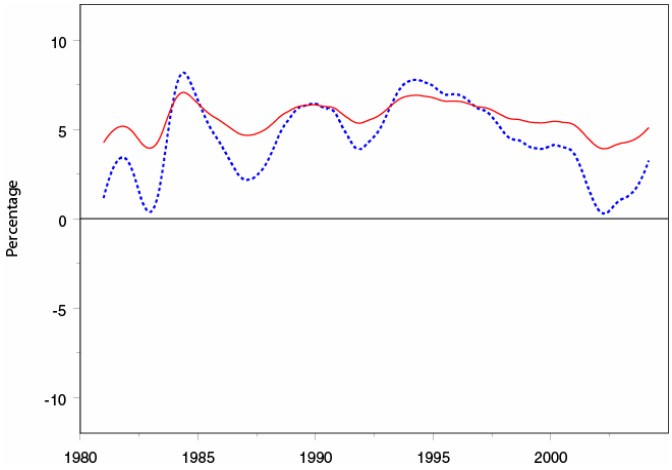
Property Tax

Total Nonagricultural Wage Growth = 4%



Non-Cyclical = 3.8% Beta = 0.4

Property Tax Revenue Pattern



Non-Cyclical = 3.8% Volatility = 0.4

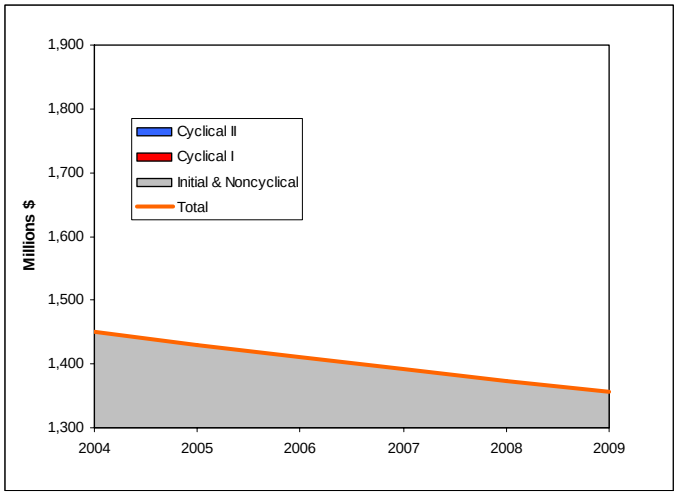
Since the property tax has a beta of .4, it moves less than the standard. This is a very stable tax regardless of the fluctuation in the economy.

Property Tax Portfolio Evaluation

- Stable over the business cycle
- Steady non-cyclical growth
- Great portfolio anchor
- Potentially beneficial attributes for the state portfolio

Sales and Use Tax

Total Nonagricultural Wage Growth = 0%



Non-Cyclical = -1.3

Without growth in non-ag wages, the sales tax base is actually shrinking at a rate of 1.3%.

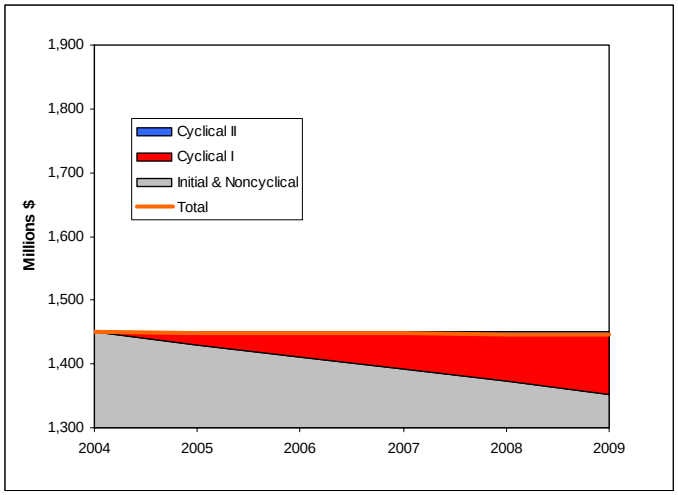
Causes for the Non-Cyclical Decline in Sales Tax

- Services increasing importance as a proportion of gross state product
- Internet sales and non-traditional sales are diminishing the base

The decline in the sales tax base can largely be explained by two factors: 1) the economy is shifting away from manufacturing based industries and more towards service based industries where sales taxes are not charged and 2) losses due to purchases on the internet or through catalogs.

Sales and Use Tax

Total Nonagricultural Wage Growth = 1.2%

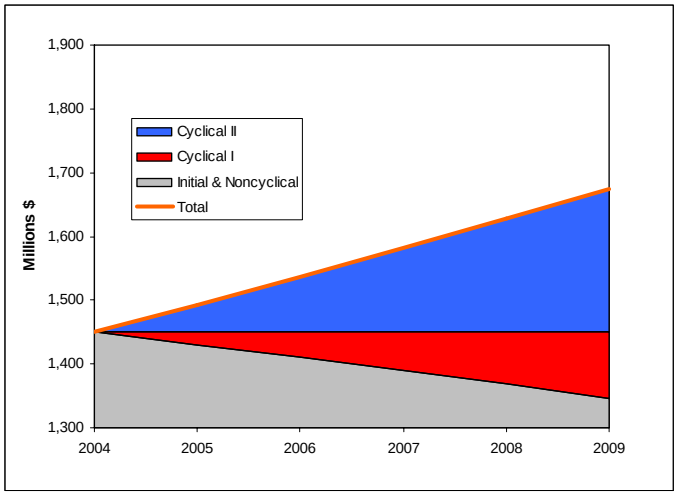


Non-Cyclical = -1.3 Beta = 1.1

Total non-ag wages would have to grow at 1.2% every year just to keep the sales and use tax base from decreasing. The sales tax has a beta of one and therefore moves pretty well with the economy.

Sales and Use

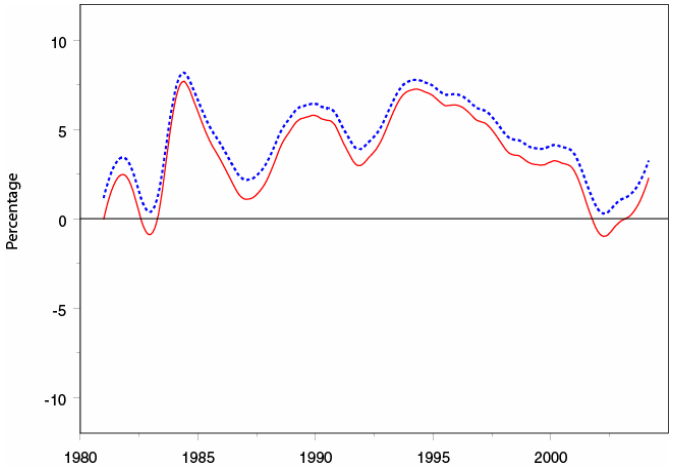
Total Nonagricultural Wage Growth = 4%



Non-Cyclical = -1.3 Beta = 1.1

Sales tax collections will grow only with growth in non-ag wages.

Sales and Use Revenue Pattern



Non-Cyclical = -1.3 Beta = 1.1

The sales tax moves in lock step with total non-ag wages.

Dotted line = non-ag wages

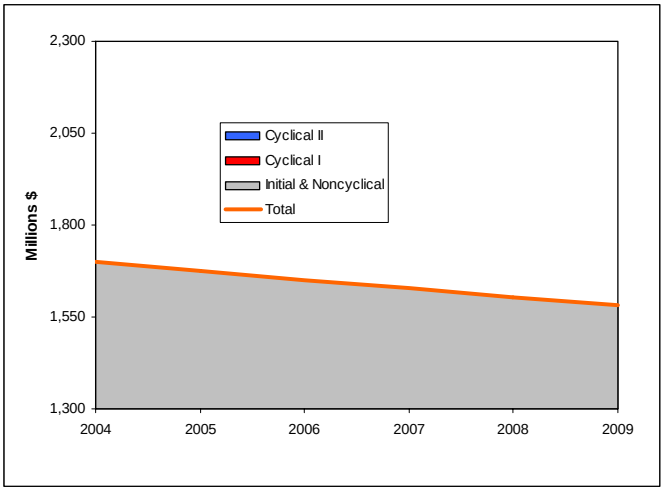
Solid line = Revenue pattern

Sales Tax Portfolio Contribution

- Non-cyclical component declines
- Moderate growth potential
- Somewhat stable revenue source
- Base is shrinking as services and internet become more prominent parts of the gross state product

Individual Income

Total Nonagricultural Wage Growth = 0%



Non-Cyclical = -1.4

Without growth in non-ag wages, the individual income tax base is declining at a rate of 1.4 percent.

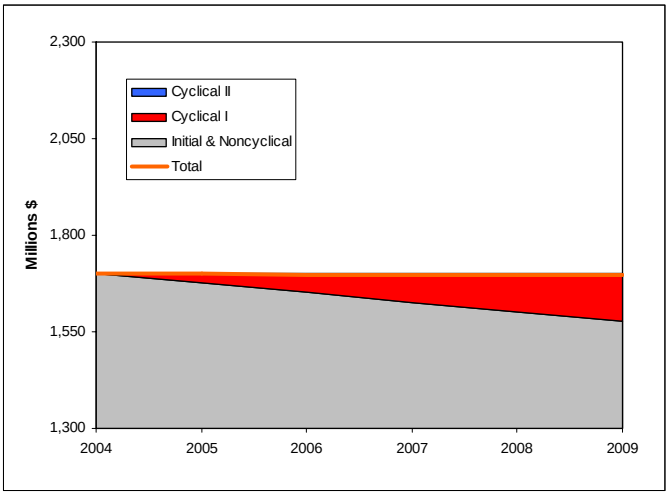
Causes for the Non-Cyclical Decline in Individual Income

- Non-compliance
- Aggressive tax shelters
- Indexing of federal exemptions

The reasons for this decline are not entirely clear, but we feel that non compliance, aggressive tax shelters and the indexing of federal exemptions all contribute to the decline.

Individual Income

Total Nonagricultural Wage Growth = 1%

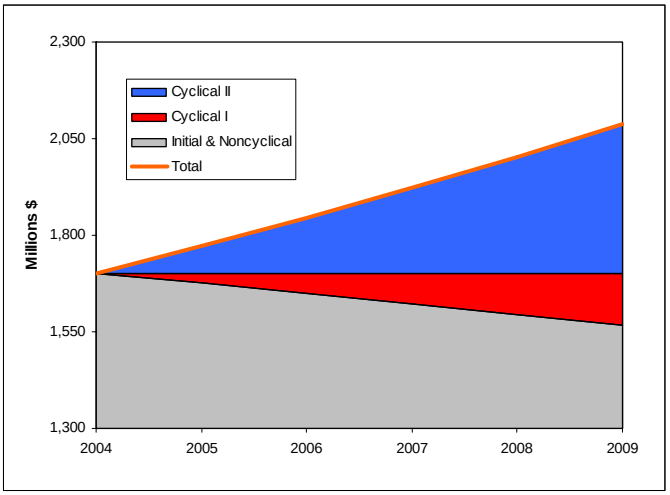


Non-Cyclical = -1.4 Beta = 1.4

Utah would need to have non-ag wage growth of 1% just to remain even.

Individual Income

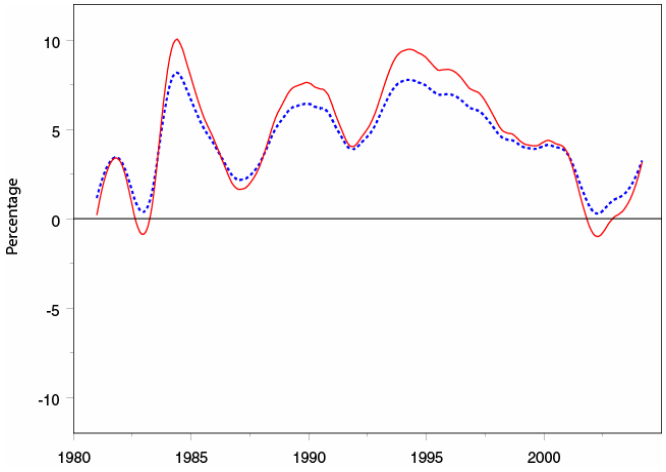
Total Nonagricultural Wage Growth = 4%



Non-Cyclical = -1.4 Beta = 1.4

With 4% non-ag wage growth, Utah will be able to grow out of it.

Personal Income Revenue Pattern



Non-Cyclical = -1.4 Beta = 1.4

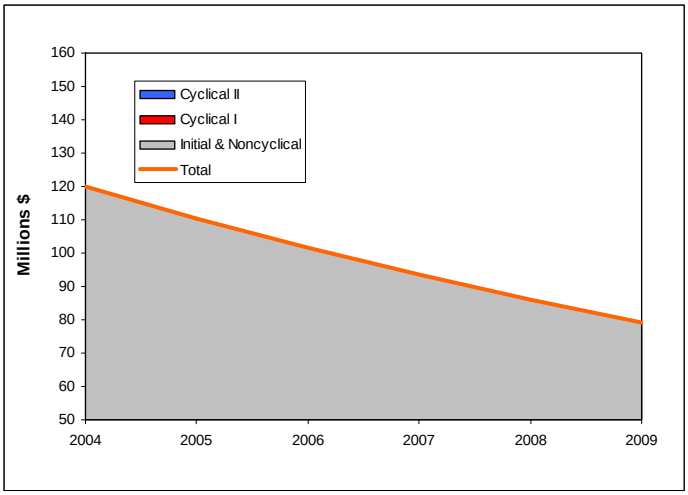
With a beta of 1.4, notice that the individual income tax (solid red line) moves more than the non-agricultural wages (dotted blue line). Is this a good tax to fund public education?

Individual Income Portfolio Contribution

- Non-Cyclical component declines
- Attractive growth potential because of high beta
- Risky revenue source for education
- Because of linkage with federal, little potential exists for changing the base

Corporate Franchise

Total Nonagricultural Wage Growth = 0%



Non-Cyclical = -8.0 Decline

Without growth in non-ag wages, the corporate income tax base is declining at a rate of 8.0 percent!

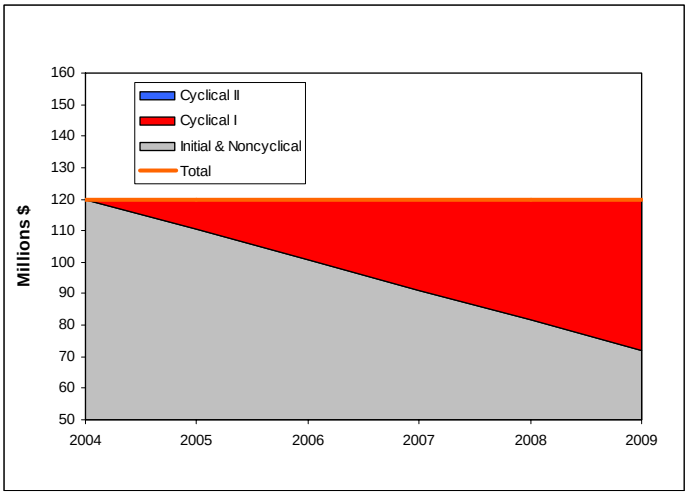
Causes for the Non-Cyclical Decline in Corporate Franchise

- Changes in the federal base
- Federal depreciation schedules
- Corporate inversions

We believe that corporate tax is declining at such a rapid rate because of changes in the federal base, federal deprecation schedules and corporate inversions.

Corporate Franchise

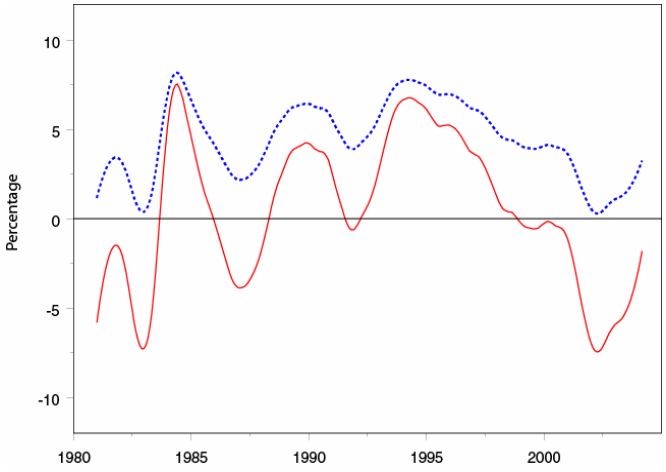
Total Nonagricultural Wage Growth = 4.2%



Non-Cyclical = -8.0 Beta = 1.9

Utah would need to experience 4.2% growth in non-ag wages just to break even in the corporate income tax (to continue to receive the same amount each year).

Corporate Franchise Revenue Pattern



Non-Cyclical = -8.0 Beta = 1.9

This is a very volatile tax. Because of the movement, it is very hard for revenue forecasters to project.

Dotted line = non-agricultural wages

Solid line = corporate franchise tax

Corporate Franchise Portfolio Contribution

- Non-Cyclical growth is negative
- Extremely volatile
- Very prominent amount of nonsystematic risk
- Very risky as revenue source for education

Utah Revenue Resources

Tax	Revenue Share (Growth)	Non Cyclical (Decline without growth in wages)	Cyclical Volatility (Beta)
Property	30.3%	3.8	0.4
Individual Income	29.9%	-1.4	1.4
Sales	27.3%	-1.3	1.1
Motor Fuel	3.5%	1.6	0.0
Corporate Franchise	2.2%	-8.0	1.9
Special Fuels	1.6%	1.7	0.4
Insurance Premium	1.1%	3.0	0.6
Cigarette and Tobacco	0.9%	-5.0	0.6
Beer	0.1%	0.2	0.2

The Non-cyclical component is the growth or decline in the tax base that occurs when non-ag wage growth is 0. The cyclical volatility is the beta of the tax.

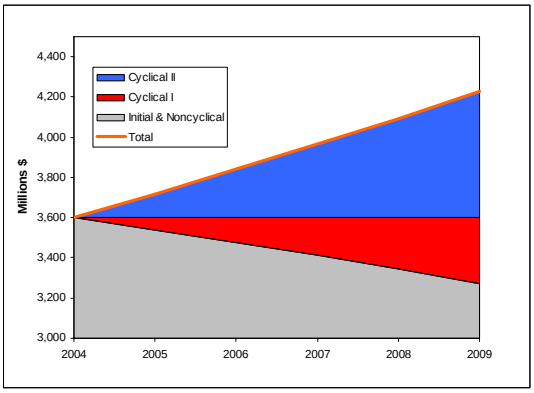
General and Uniform School Funds

Tax	Revenue Share	Non Cyclical	Cyclical Volatility
Individual Income	47.1%	-1.4	1.4
Sales	43.1%	-1.3	1.1
Corporate Franchise	3.5%	-8.0	1.9
Insurance Premium	1.7%	3.0	0.6
Cigarette and Tobacco	1.5%	-5.0	0.6
Beer	0.1%	0.2	0.2

The major taxes that make up the General and Uniform School Funds.

General and School Fund Expected Growth

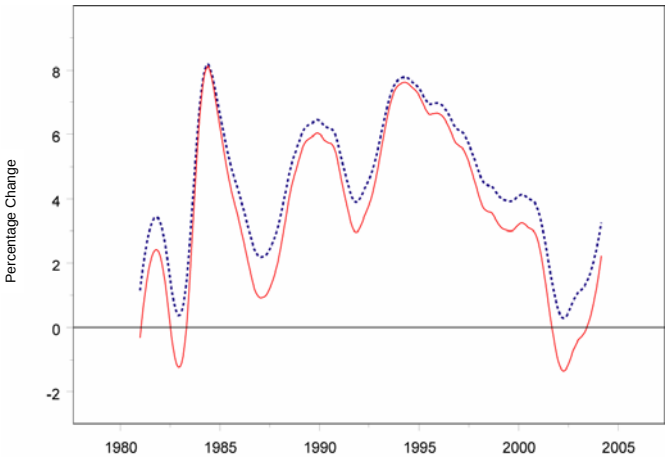
(excluding property tax)
Total Nonagricultural Wage Growth of 4%



Non-Cyclical: -1.7%

Beta: 1.2

Combined Fund Revenue Pattern



Non-Cyclical: -1.7% Beta: 1.2

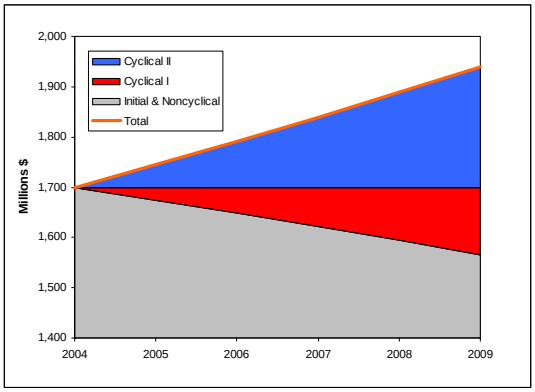
The combined General and Uniform School Funds have a portfolio beta of 1.2. This means that it is slightly more volatile than the change in non-ag wages.

Dotted line = General and Uniform School Funds

Solid line = non-ag wages

General Fund Expected Growth

Total Nonagricultural Wage Growth of 4%

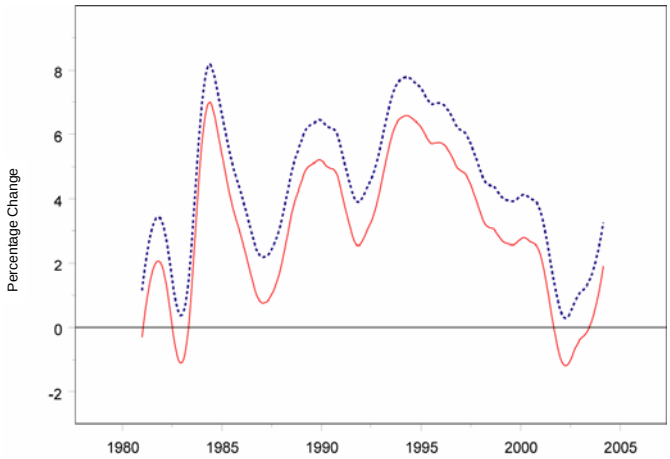


Non-Cyclical: -1.5%

Beta: 1.04

The General Fund's beta is 1.04. It is close to 1 largely because of the beta of the sales tax, which is 1.1.

General Fund Revenue Pattern



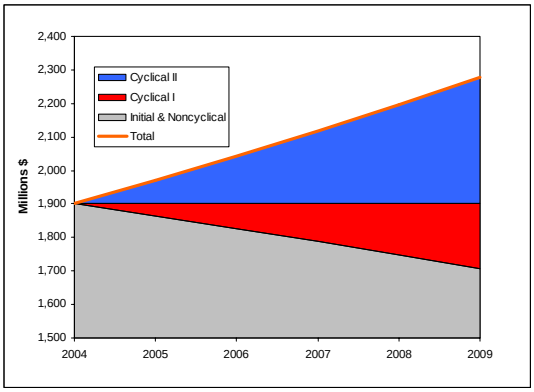
Non-Cyclical: -1.5% Beta: 1.04

Generally follows the change in non-ag wages.

Dotted line = General Fund
Solid line = non-ag wages

Uniform School Fund Expected Growth

Total Nonagricultural Wage Growth of 4%

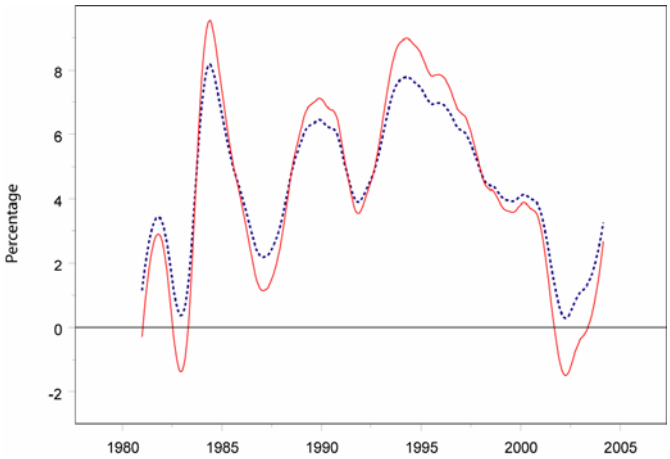


Non-Cyclical: -1.9%

Beta: 1.4

The School Fund has a beta of 1.4. This is due to the high betas of the individual and corporate income taxes. This fund is more volatile than the standard.

School Fund Revenue Pattern



Non-Cyclical: -1.9% Beta: 1.4

Because of the high beta, the school fund is more buoyant than the changes in non-ag wages.

Dotted line = School Fund

Solid line = non-ag wages

General and School Fund Summary

- General Fund (primarily sales tax) will grow with the economy but suffers from a deteriorating base
- Uniform School Fund (individual and corporate income tax) will grow faster than the economy but with extreme risk and potential volatility
- Corporate Franchise potentially destabilizes the tax portfolio but provides needed revenue
- Property tax has potential for stabilizing role

Summary of General and School Funds

Uniform School Fund Application

Can the Uniform School Fund as currently exists support the anticipated increases in enrollment during the next decade?

Four scenarios based on:

- Utah Business Cycle 1981-1991
- Utah Business Cycle 1993-2003
- 5.0% Average Total Nonag Wage Growth
- 4.5% Average Total Nonag Wage Growth

To answer the question posed in this slide, we will show four different scenarios applied to the Uniform School Fund to see what the revenues would look like.

Scenario 1
Business Cycle 1981 - 1991

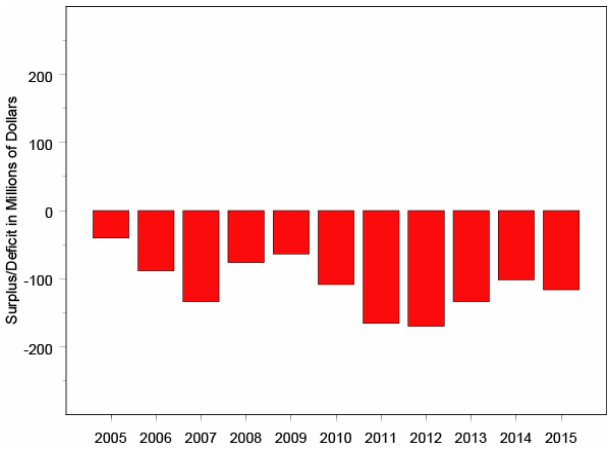
In the first scenario, we use the business cycle pattern of the period from 1981 to 1991. Notice the recession of the early 80's as well as the slowdown in 1986 and 1987. This was not a particularly strong decade in terms of non-ag wages.

Simple Ratio Logic to Expenditures

- Nonagricultural employment to population
- Population to child bearing women
- Child bearing women to births
- Births to enrollment
- Hold per pupil expenditure constant

In an effort to project what public education expenditures will be over the next 10 years, economists used the ratio logic shown in this slide. The ratios result in estimates of how many children will be entering the public education system over the next 10 years. These estimates are multiplied by the current per pupil expenditure to project total public education expenditures over the next 10 years.

Uniform School Fund Surplus or Deficit Using 1981-1991 Pattern



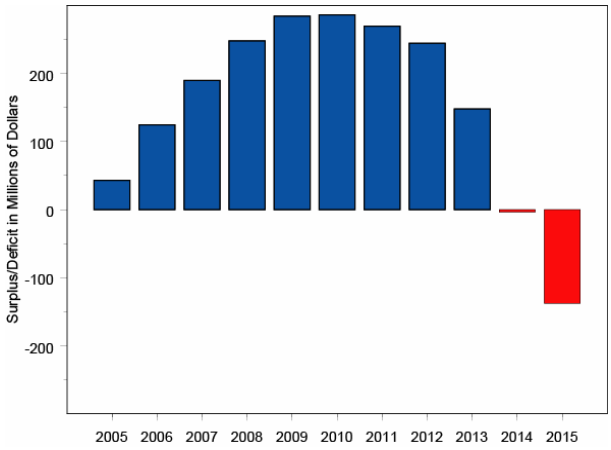
Given the projected expenditure, a business cycle like the one we experience from 1981 to 1992 will put us in the red.

Scenario 2

Utah Business Cycle 1993 - 2003

In the second scenario, we use the business cycle pattern of the period from 1993 to 2003. The early 90's were very prosperous until the dotcom bubble burst.

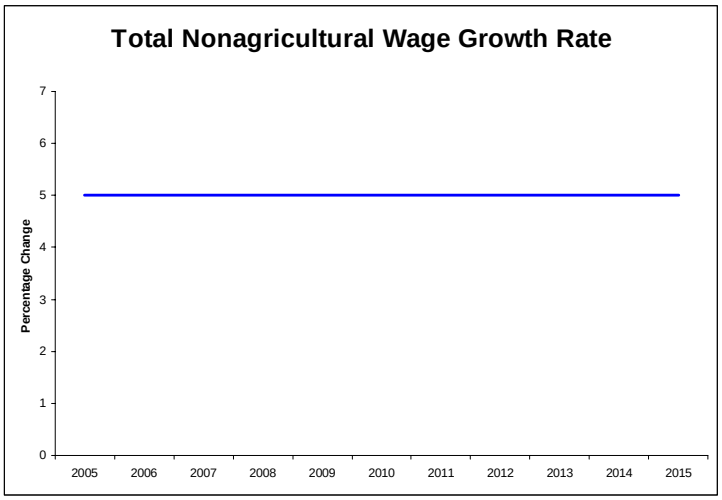
Uniform School Fund Surplus or Deficit Using 1993-2003 Pattern



Even with projected education expenditures, a decade of growth similar to the 90's should not be a problem until 2014 and 2015.

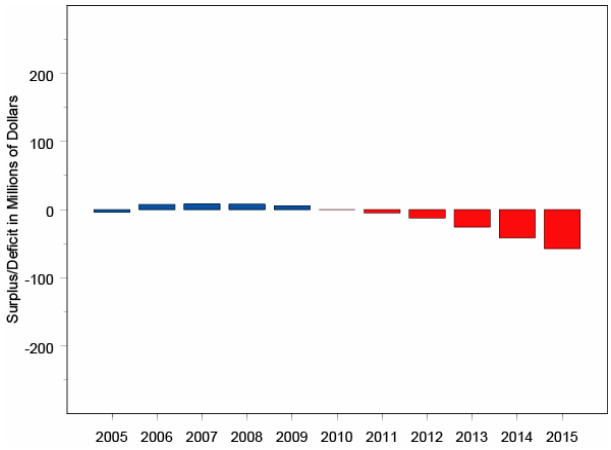
Scenario 3

Constant Growth in Total Nonagricultural Wages of 5%



In the third scenario, we assume constant growth of 5%.

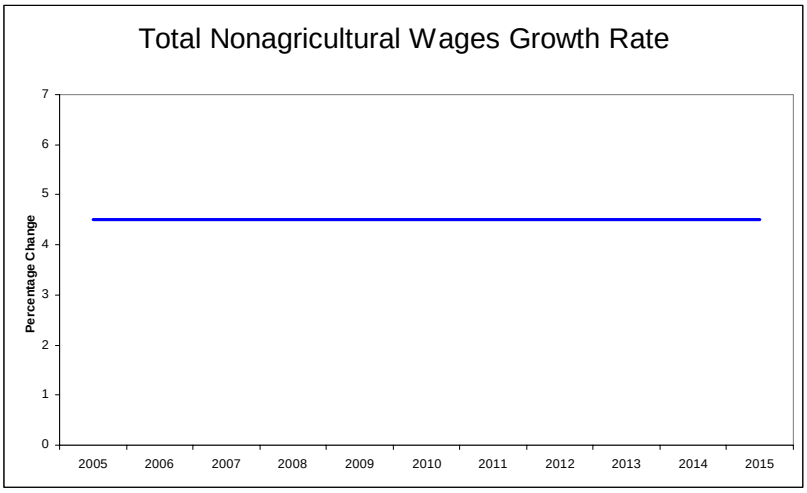
Uniform School Fund Surplus or Deficit at 5% Constant Growth Rate



With 5% constant growth in non-ag wages, we expect to see a surplus during the initial years and a deficit during the later years.

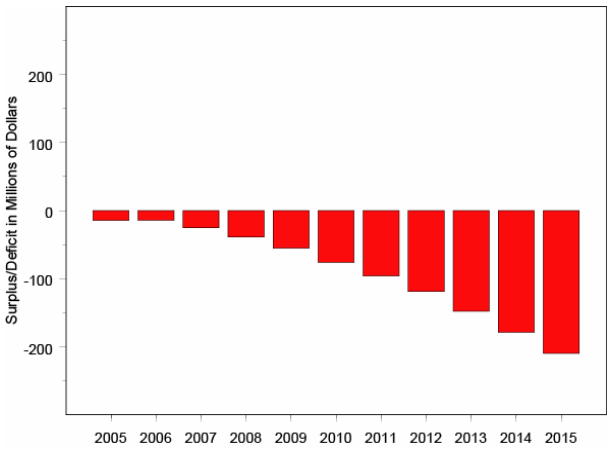
Scenario 4

Constant Growth in Total Nonagricultural Wages of 4.5%



In the fourth scenario, we assume constant growth of 4.5% in non-ag wages, just .5% lower than in scenario 3.

Uniform School Fund Surplus or Deficit at 4.5% Constant Growth Rate



The results are quite dramatic. With constant growth of 4.5% in non-ag wages, we expect to see deficits reaching 200 million by 2015.

Objectives for Tax Portfolio

- Provision for appropriate revenues
- Controls risk
- Flexibility to cope with variety of economic and demographic outcomes

When designing the optimal tax portfolio, we feel that there are several factors that should be considered. The portfolio should make provision for appropriate revenues while controlling for risk. It should also be flexible enough to cope with a variety of economic and demographic outcomes.